Using OMI observations to measure aerosol absorption of biomass burning aerosols above clouds

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The presence of absorbing aerosol layers above clouds is unambiguously detected by the TOMS/OMI UV Aerosol Index (AI) that uses satellite observations at two near-UV channels. A sensitivity study using radiative transfer calculations shows that the AI signal of resulting from the presence of aerosols above clouds is mainly driven by the aerosol absorption optical depth and the optical depth of the underlying cloud. Based on these results, an inversion algorithm has been developed to retrieve the aerosol optical depth (AOD) of aerosol layers above clouds. In this presentation we will discuss the sensitivity analysis, describe the retrieval approach, and present results of applications of the retrieval method to OMI observations over the South Atlantic Ocean. Preliminary error analyses, to be discussed, indicate that the AOD can be underestimated (up to -30%) or overestimated (up to 60%) depending on algorithmic assumptions.